

Jetstream-31 (J31) Flight Report for INTEX-ITCT

Flights 4, 5, and 6

10 July 2004

Ferry & Test, Ames to Pease

Flight Numbering for previous flights:

1. Test flight from Ames, 13 May 2004
2. Test Flight from Ames, 13 May 2004
3. Test Flight from Ames, 9 July 2004

Overview of Flights 4, 5, and 6

These three flights together made the transit from Ames to Pease, with instrument tests on the first two. Aboard were pilots Hovelman and Martin, mechanic Zimmerer, and instrument operators Billings, Eilers, Livingston, and Russell.

Overall, the flights were successful. J31 functioned very well on all 3 flights. There were no significant weather delays. It appears that all instruments are now functioning well and ready for science flights out of Pease.

Flight 4: Ames to McCook, Nebraska

We took off from Ames at ~13:18 UT (6:18 AM PDT). The Position and Orientation System (POS), Nav/Met Data System, Solar Spectral Flux Radiometer (SSFR) and the 14-channel Ames Airborne Tracking Sunphotometer (AATS-14) all appeared to function well on the climbout from Ames.

Before reaching the cruising altitude of ~21,000 ft, AATS began to lose detector signal and then lost tracking when outside air temperature was -11C. AATS was unable to regain tracking for the remainder of the flight. During this time AATS was parked and purged with zero air in between several attempts to restart tracking.

POS, Nav/Met, and SSFR continued to function well throughout the flight.

Flight 5: McCook, Nebraska to Niagra Falls International Airport

We took off ~18:31 UT (11:31 AM PDT). All instruments, including AATS, functioned well on taxi and initial climb. When ascending thru the freezing level, AATS showed some symptoms of loss of signal and tracking. But it recovered quickly and functioned well for the remainder of the flight.

POS, Nav/Met, and SSFR functioned well throughout the flight.

Flight 6: Niagra Falls International Airport to Pease International Tradeport

We took off ~22:53 UT (7:53 PM EDT). Sun was low among broken clouds. POS was not operated because its disk was nearly full and there was not time to dump it (we had to take off to beat approaching thunderstorms). Because of the low sun, broken clouds, and lack of POS data, Nav/Met, SSFR, and

AATS did not take data on this flight. However, SSFR and AATS were powered up for the flight, with AATS parked.

AATS assessment

Our best assessment of the AATS problems on Flight 4 is that moisture in the detector head caused window frost that obscured some or all science channels and possibly the quad-cell tracking detector. Tracking may also have been prevented by moisture causing a partial short of quad-cell output signals. It appears that purging has solved the problem. AATS purging will continue between flights as a precautionary measure.